

STAT:5201 (22S:165) Applied Statistics II

Russell V. Lenth

Spring Semester, 2013

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| Time and Place | MWF 11:30 am–12:20 am, 30 Schaeffer Hall |
| Prerequisite | 22S:164 (STAT:5200) Do not register if you do not meet it; you'll be in over your head. |
| Textbook | Oehlert, G. W. (2000), <i>A First Course in Design and Analysis of Experiments</i> , New York: W. H. Freeman and Company. <i>Note:</i> This book is out of print, but used copies may be available online. It is also available as a free download via http://www.stat.umn.edu/~gary/Book.html (c)2010 under the Creative Commons license. (I recommend getting it printed and spiral-bound! If you take it to a copy shop, also take a printout of the above web page—the language that says you may print it, etc.) |
| Class Web page | http://www.stat.uiowa.edu/~rlenth/s5201/ Grades will be posted on ICON: http://icon.uiowa.edu/ |
| Instructor | Russell V. Lenth, 271 Schaeffer Hall, 335-0814, russell-lenth@stat.uiowa.edu |
| Office Hours | Mon, Wed., Thu. 1:00-2:00pm; and by appointment |
| Statistics office | DEO: Professor Luke Tierney, 241 Schaeffer Hall, 335-0712 |

Course Goals

This is the second course in the graduate applied statistics sequence, emphasizing experimental design and analysis. At the end of the semester, you should have a fairly deep understanding of models and assumptions for experimental data, and an ability to reason in terms of numerous sources of random variation. Experimental design is all about managing these variations by judicious choices regarding randomization, restricted randomization (blocking), subsampling (nesting), sample-size selection, etc. These are the design topics; we will also discuss analysis of experiments and techniques for multiple comparisons, with an emphasis on computational tools (primarily R). Finally, there will be material on the underlying theory, especially that related to mixed models (where some regression coefficients are random variables).

Topics

The course covers much of the Oehlert book: Chapters 1-5, 7-13 with a few omissions, and parts of 16 and 17. Certain portions will be supplemented with handouts. The homework page on the website will indicate what

topics are coming up.

Course work

There will be four equal exams (including the last exam during finals week), homework, and a group project. The dates of the exams are given in the section on grading. *Deviations from the scheduled final time will only be made in accordance with University policies. If you fly home early, you will get a zero on Exam 4.*

I intend to have homework assignments that are due almost daily. Many will be quite short and emphasize techniques. I will require you to do these short assignments **independently** and they will be graded for correctness.

Some other assignments (fewer of them) will involve analyzing complicated datasets, or designing and conducting your own experiments (often by simulation routines I will provide); these should be done in study groups of three or so, and I may ask your group to present your solution in class. So, you need to organize groups: we'll discuss this in the first lecture. The group papers will be collected as well, but they will not necessarily be graded very thoroughly.

Your study group will carry out a project where you design and carry-out an experiment to study a topic of interest to your group. You will present your project at a poster session near the end of the semester, and submit a brief report.

Grading

Grading elements are weighted as follows:

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| Exam 1 | Wed, Feb 13 | 20% |
| Exam 2 | Wed, Mar 13 | 20% |
| Exam 3 | Wed, Apr 17 | 20% |
| Exam 4 | Finals week, TBA | 20% |
| Project | (in groups) | 10% |
| Homework | | 10% |

The project grade will include evaluations of the group project work, as well as evaluations of your contributions by your group members.

The basic cutoffs between whole-letter grades are at 90, 80, 70, etc., and the determination of minus, unmodified, or plus is based on the ones digit being in the sets (0,1,2), (3,4,5,6), and (7,8,9). For example, the A-minus range is 90.00–92.99, and the B range is 83.00–86.99.

The date and time of Exam 4 is not yet known. We are required to hold the final exam on the date that will be decided by the UI administration around March 1.

Therefore, do not commit to any travel plans during

finals week! If you fly home early, you will get a zero on Exam 4.

Integrity of course materials

I request that you work to preserve the integrity of the textbook and course materials. This means that under no circumstance should you make public (either in print or via web postings, social networks, etc.) any of your solutions of textbook or exam problems; nor may you disseminate handouts and other materials that I prepare. You must also strive to avoid making use of any solutions provided by anyone outside of this class, or any printed or posted solutions to textbook problems or to the same problems in other texts. Compliance with this request will be considered part of the academic honesty requirements discussed further below under Administrative Policies.

Late work and absences

If you must miss class due to an illness or family emergency, please inform me **immediately if at all possible** and get caught up as quickly as possible. Don't ever get more than a week behind, as it becomes very hard to catch up.

If there is a pattern of excessive absences from the lecture, I will warn you; if the pattern continues, I will drop you from the course.

Administrative policies

The following policy and procedural statements are extracted from the College of Liberal Arts and Sciences policies site, <http://www.clas.uiowa.edu/faculty/teaching/policies.shtml>.

Administrative Home

Department of Statistics and Actuarial Science is the administrative home of this course. This is a department of the College of Liberal Arts and Sciences, which governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS [Academic Policies Handbook](#).

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, [III.15.2](#). Scroll down to k.11.)

Accommodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular

arrangements. See <http://www.uiowa.edu/~sds/> for more information.

Academic Honesty

All CLAS students have, in essence, agreed to the College's [Code of Academic Honesty](#): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the [IOWA Challenge](#). I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled ([CLAS Academic Policies Handbook](#)).

CLAS Final Examination Policies

The date and time of every final examination is announced during the fifth week of the semester; each CLAS student will receive an email from the Registrar stating the dates and times of the student's final exams. Final exams are offered only during the official final examination period. **No exams of any**

kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident ([CLAS Academic Policies Handbook](#)).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All

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members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI [Comprehensive Guide on Sexual Harassment](#) for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the [Public Safety web site](#).